

ABSTRACT OF THE DISCLOSURE

A system 10 is provided for supplying air to a fuel cell 12 for use within a vehicle 14. The system 10 includes a conventional storage tank 16 which receives and stores hydrogen gas at a relatively high pressure, an expander unit 18, a compressor unit 20, pressure regulators 22, 24, a valve 26, a controller 30, and vehicle sensors 32, and a secondary compressor 34. The system 10 selectively channels pressurized hydrogen gas through expander unit 18 which lowers the pressure of the hydrogen gas and rotatably drives compressor 20. By utilizing the potential energy within the hydrogen gas to drive compressor 20, system 10 conserves energy and improves the overall fuel economy of the vehicle 14.